Designing a new Inline Insulated Piercing Trough Connector for conductor cross-sections 1.5 to 25 mm².

**ABSTRACT**

Regarding to practical and safety requirements Enexis experienced a lack of availability of the correct/needed through connectors on the world market. Because manufacturers didn’t self-start new developments after several requests of Enexis, Enexis came up with the idea of tendering in a “Design Contest” for an Insulated Piercing Connector to give manufacturers in the world market of connectors this development push.

This paper covers the reasons for, the process during, and the results of this design-contest-tender that was mainly carried out for and by mechanics of Enexis, in collaboration with Asset Management, Innovation and Purchasing.

**KEYWORDS**

Low voltage, Accessories, Insulated Piercing Connector, Working under live conditions, Safety regulations, European tendering regulations, Design contest, Product development, Collaboration, Procurement.

**INTRODUCTION**

Enexis is one of the three largest Distribution System Operators in the Netherlands, having a LV-network of about 90,000 km cable length. Working under conditions where low voltage cables are de-energized at installation of trough- and branch joints nowadays in some occasions is less tolerated by customers than in the previous era. Working under live conditions is only tolerated by the safety regulator as long as strict safety requirements are met. Regarding to these requirements, Enexis experienced a lack with respect to the availability of the right insulation piercing connectors for conductor cross-sections 1.5mm² to 25 mm².

Currently available insulated piercing connectors e.g. require an overlap of the conductors for installation which, according to Enexis’ mechanics, is unsuitable at e.g. the reconnection of disconnected defaulters. According to mechanics of Enexis, due to the large conductor range, also a lot of the currently available insulation piercing connectors have too large dimensions compared to the conductor they are installed upon.

**SPECIFICATION PHASE**

**Cable and conductor types**

At the specification phase Asset Management and the mechanics first inventoried together which cable types and conductor types are in use, leading to the requirement that the desired connector should be suitable for 0.6/1kV mass impregnated paper, PVC and XLPE insulation. For conductor cross-sections 1.5 to 10 mm² it was concluded that only solid copper conductors are in...